

REMARKS

Claims 14-44 are pending in the application.

Claims 16-44 are withdrawn from consideration.

Claims 14 and 15 are rejected.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al. (U.S. Patent 4,648,783) and Tino (U.S. 5,280,622).

The Applicants traverse the rejections and request reconsideration.

Claim Rejections Under 35 U.S.C. 103(a)

Rejection of claims 14 and 15as being unpatentable over Tan and Tino

Claim 14 requires a detecting device for detecting position of an object (teacher). Based on the position information, an operational speed of the robot is determined and the robot is controlled to this determined maximum speed.

Tan is cited for its teaching related to the robot, the teacher and the detecting device.

Tino is cited for its teaching on the speed limiting operation with respect to the detected position information.

In Tino, a staged interlock system is provided using a combination of a light curtain and a transducer (See Tino 6:27-30). The light curtain detects an intrusion by a foreign object (which could arguably be teacher). In addition, the transducer provides a further indication of how far the intruding object is from the robot (Tino 6:33-36). If the distance is within a range, the movement speed of the robot is reduced (Tino 6:46-48). **Tino further discloses that, if the range from the robot to the operator is less than three feet, the robot is stopped** (Tino 8:56).

In Tino, in order to avoid from collision (interposition) between a man and a robot, intrusion into a work space is detected by light curtain, and a distance between the man and the

robot is detected by ultrasonic sensor. In accordance with an intrusion detecting signal and a distance signal, an operating speed of the robot is reduced or zero. Namely, as the man approaches the robot, an operating speed of the robot is reduced or zero. However, such a reduction of the speed to zero is applied to a work during a period when a task program stored in the robot is reproduced. Namely, a task is controlled by a stored program (Tino 1: 14-22)

On the contrary, in the present invention, the safety of the operator is assured in a case that the operator (teacher, man) approaches the robot to operate thereof and registers or confirms a position of the robot instead of a period when a task program is reproduced. For example, the claim recites that the robot control apparatus is equipped with a pendant that is manipulated by a teacher for controlling the operation of the robot. Thus it is clear that the pendant is operated by a teacher who approaches the robot and comes to within a range that will permit the teacher to manipulate the pendant. If the operator is at a position apart from the robot, a speed of the robot is, for example, 250 mm/s. If the operator approaches the robot, a speed of the robot is reduced so that the operator can perform an evading action against the inadvertent operation of the robot.

However, if the speed is reduced to zero as the teacher approaches within 3 feet (as in Tino), it will be impossible to accomplish a task of teaching in detail. Therefore, the combined teachings of Tan and Tino do not suggest a robot whose pendant can be manipulated by the teacher to perform a teaching operation as in the present invention.

Thus, the combined teachings of Tan and Tino do not suggest the present invention.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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